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PATENT SPECIFICATION

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492,711

PROVISIONAL SPECIFICATION

Process for the Production of a Combined Coloured Picture and Sound Record Film

I, Dr. Bela Gaspar, a Subject of the King of Roumania, of 77/79, Rue Berkendael, Brussels, Belgium, do hereby declare the nature of this invention to be as follows:—

This invention relates to a process for the production of a combined coloured picture and sound record film.

In my prior Patent No. 412,949 there is described a process for the production of a combined coloured picture and a sound record film in which the sound record is produced in the form of a black silver deposit on a colourless or coloured background. In one method of carrying out the said process the black silver deposit, after having been used for local destruction of a dyestuff, is converted into a silver salt which is fixed out in the image portion of the film, the silver salt present in the sound track portion of the film being reconverted into black silver and is consequently not dissolved by the fixing bath.

The chief object of the present invention is to provide an improved method of carrying out such a process or any other similar process in which a sound record in the form of a silver salt is reconverted into black metallic silver.

According to the present invention, the silver salt in the sound track is reconverted into silver by the use of a solution containing a reducing agent such, for example, as a photographic developer and a stiffening agent such, for example, as starch.

If desired, a wetting or emulsifying agent may be added to the solution.

One convenient blackening solution according to the present invention may comprise for example:—

400 ccs. water.
10 grms. metol.
120 grms. sodium sulphite cryst.
30 grms. hydroquinone.

To which are added:

33 grms. sodium hydroxide.
220 grms. dextrine, and
10 ccs. of a 3.3% solution of the substance sold under the Trade Mark "Nekal" (I. G. Farbenindustrie).

[Price 1/-]

In place of the 33 grms. of sodium hydroxide above mentioned, 50 ccs. of a caustic soda solution of 40% strength may be used but in this case 350 ccs. of water are used instead of the 400 ccs. above mentioned.

This solution is applied to the sound track area of the film after the dyestuffs therein have been selectively destroyed and after conversion of the silver into silver halide.

Selective destruction of the dyestuffs may be effected, for example, by means of a solution of 5% thiocarbamide and 2½% citric acid or by a 3% solution of hydrochloric acid. The conversion of the silver into silver halide may be effected by treatment with an acid solution of cupric chloride.

The blackening solution according to the present invention may be applied by means of a small wheel, the periphery of which is provided with a concave channel. This channel takes up a certain amount of the blackening solution from a tank and applies the same to the sound track area of the film. The solution should be allowed to act for about one or two minutes during which time the silver salt is completely blackened to form a sound record of black silver. The film may then be fixed.

According to a further feature of the present invention, a fogging agent is added to the blackening solution. Suitable fogging agents are, for example, allyl-thiocarbamide (thiosinamine) or thioacetamide. The amount of fogging agent used should not be too large and the following solution may be used:—

400 ccs. water.
0.4 grms. metol.
18 grms crystalline sodium sulphite.
3 grms. hydroquinone.
6 grms. anhydrous sodium carbonate.
3 grms. potassium bromide.

With the addition of:

20 ccs. water in which
0.04 grms. thiosinamine are dissolved.

The developing solution thus obtained may also contain a stiffening agent such as starch and also, if desired, a wetting agent such as "Nekal". The addition

of fogging agents to the blackening solution has the advantage of yielding a better blackening of the sound record.

Dated this 20th day of March, 1937.

LESLIE N. COX,
Patent Agent,
408/9, Bank Chambers,
29, Southampton Buildings, London, W.C.2,
Agent for the Applicant.

COMPLETE SPECIFICATION

Process for the Production of a Combined Coloured Picture and Sound Record Film

I, Dr. Bela Gaspar, a Subject of the King of Roumania, of 77/79, Rue Berkendael, Brussels, Belgium, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to a process for the production of a combined coloured picture and sound record film.

In my prior Patent No. 412,949 there is described a process for the production of a combined coloured picture and a sound record film in which the sound record is produced in the form of a black silver deposit on a colourless or coloured background. In one method of carrying out the said process the black silver deposit, after having been used for local destruction of a dyestuff, is converted into a silver salt which is fixed out in the image portion of the film, the silver salt present in the sound track portion of the film being reconverted into black silver and is consequently not dissolved by the fixing bath.

The chief object of the present invention is to provide an improved method of carrying out such a process or any other similar process in which the black silver deposit after having been used for the local destruction of a dyestuff is converted into a silver salt which is fixed out in the image portion of the film, the sound record being reconverted into black silver.

According to the present invention, the silver salt in the sound track is reconverted into silver by the use of a solution containing a reducing agent such, for example, as a photographic developer and a thickening agent such, for example, as starch.

If desired, a wetting or emulsifying agent may be added to the solution.

In my United States Patent Specification No. 2,025,658 there is described a process for the production of a combined coloured picture and sound record film in which a sound record, after being used for the local destruction of the dyestuff and after having been transformed into a silver salt, is reblackened. For this purpose it was proposed to use a solution of a reducing agent without, however, the addition of a thickening agent. Alternatively it was proposed to prevent the silver in the sound track being converted to silver salt when that in the picture was so converted. For this special purpose it was proposed to apply to the sound track only a solution of a reducing agent with the addition of a thickening agent.

One convenient blacking solution according to the present invention may comprise for example:

400 ccs. water.
10 grms. metol.
120 grms. sodium sulphite cryst.

To which are added:

33 grms. sodium hydroxide.
220 grms. dextrine, and
10 ccs. of a 3.3% solution of the substance sold under the Trade Mark "Nekal" (I. G. Farbenindustrie).

In place of the 33 grms. of sodium hydroxide above mentioned, 50 ccs. of a caustic soda solution of 40% strength may be used but in this case 350 ccs. of water are used instead of the 400 ccs. above mentioned.

This solution is applied to the sound track area of the film after the dyestuffs therein have been selectively destroyed and after conversion of the silver into silver halide.

Selective destruction of the dyestuffs may be effected, for example, by means of a solution of 5% thiocarbamide and 2½% citric acid or by a 3% solution of hydrochloric acid. The conversion of the silver into silver halide may be effected by treatment with an acid solution of cupric chloride.

The blackening solution according to the present invention may be applied by means of a small wheel, the periphery of which is provided with a concave channel. This channel takes up a certain amount of the blackening solution from a tank and applies the same to the sound track area of the film. The solu-

tion should be allowed to act for about one or two minutes during which time the silver salt is completely blackened to form a sound record of black silver. The film may then be fixed.

According to a further feature of the present invention, a fogging agent is added to the blackening solution. Suitable fogging agents are, for example, allyl - thiocarbamide (thiosinamine) or thioacetamide. The amount of fogging agent used should not be too large and the following solution may be used:—

400 ccs. water
0.4 grms. metol.
18 grms. crystalline sodium sulphite.
3 grms. hydroquinone.
6 grms. anhydrous sodium carbonate.
3 grms. potassium bromide.

With the addition of:

20 ccs. water in which
0.04 grms. thiosinamine are dissolved.

The developing solution thus obtained may also contain a thickening agent such as starch or dextrine and also, if desired, a wetting agent such as "Nekal". Other wetting agents are lignine sulphonic acids, sulphonated fatty acids, the substance sold under the Trade Mark "Invadine" by Society of Chemical Industry, Basle, and Alborite. The addition of fogging agents to the blackening solution has the advantage of yielding a better blackening of the sound record.

The blackening of the sound record may be performed in any process of producing cinematographic dyestuff pictures involving the bleaching out of the silver image or leading to an intermediate stage in which the sound portion of the film comprises a silver halide sound record. Thus, for example, the blackening of the sound record may be performed not only in the process in which the silver image is used to destroy a dyestuff in a predyed layer but also in processes in which the dyestuff image is produced from dyestuff forming substances and in which after the dyestuff pictures have been produced the silver is bleached to silver salts and dissolved. Thus, for example, in the case of a film in which the dyestuff image has been produced by the process of colour development the silver is usually removed by Farmer's reducer. According to the present invention Farmer's reducer is replaced by a bleaching solution which, without dissolving the silver salt, transforms the metallic silver into insoluble silver salts which, thereafter, are removed by a fixing solution. Before fixing out, the blackening solution is applied to the sound area of the film which reduces the silver salt to silver or transforms it into a dark compound incapable of being dissolved in the subsequent fixing bath which removes the silver salt from the picture area of the film. The blackening of the silver salt in the sound area of the film may be carried out in one or more layers of a multi-layer material in which all of the layers are colourless or coloured or in which some of the lyers are coloured and the other layers are colourless. The colourless layers may, if desired, contain dyestuff forming substances or dyestuff components. If all of the layers are coloured and the dyestuff is not destroyed in that portion of the sound area of the film which is unoccupied by the silver sound record, dyestuffs are used which are transparent to infra red or other invisible light and in each case for scanning the sound record a light-sensitive device responsive to light transmitted by the colour of the sound area is used.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A process of producing coloured cinematographic sound films comprising a colour picture and a sound record characterised by the fact that in the production of the dyestuff image in the film the photographic records of the film are transformed into silver halide records and that the sound portion of the film is treated with a solution of a reducing agent together with a thickening agent such as, for instance, starch, the film thereafter being treated with a fixing solution which removes the silver salt from the picture portion of the film, but leaves the sound record undissolved.

2. A process as claimed in Claim 1 in which a wetting agent such as "Nekal" is added to the blackening solution.

3. The method as claimed in Claim 1 or 2 in which a fogging agent is added to the blackening solution.

4. Sound films if produced according to one of the preceding claims.

5. A process substantially as described.

Dated this 21st day of March, 1938.

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